CLAIMS

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1. (currently amended) An optical communication system comprising a first number M of fixed wavelength lasers coupled to a second number N of external modulators (N less than M and greater than one) through a photonic cross-connect switch, wherein the photonic cross-connect switch for ~~is capable of~~ routing the optical carriers of any N of the M fixed wavelength lasers to the N external modulators while maintaining the polarity of the N optical carriers routed to the N external modulators, and wherein the N external modulators are coupled to N data signals for producing N optical data streams from the N optical carriers and the N data signals.

2. (original) The optical communication system of claim 1, wherein each of the N data signals is fed to a different one of the N external modulators.

3. (currently amended) The optical communication system of claim 1, wherein the outputs of the fixed wavelength lasers ~~comprises~~ comprise optical carriers at distinct wavelengths.

4. (original) The optical communication system of claim 1, wherein the photonic cross-connect switch comprises:

at least M optical inputs coupled to the outputs of the M fixed wavelength lasers;

at least N optical outputs coupled to the inputs of the N external modulators; and

a photonic cross-connect fabric coupled to the at least M optical inputs and to the at least N optical outputs via polarization maintaining fiber for routing the optical carriers of any N of the M fixed wavelength lasers to the N external modulators.

5. (original) The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a Micro Electro Mechanical System (MEMS).

6. (original) The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a Micro Opto Electro Mechanical System (MOEMS).

7. (original) The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a bubble (champagne) optical switching system.

8. (original) The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a lithium niobate optical switching system.

9. (original) The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a liquid crystal optical switching system.

10. (original) A photonic cross-connect device comprising at least M optical inputs coupled to at least N optical outputs (N less than M) through a photonic cross-connect fabric that is coupled to the at least M optical inputs and to the at least N optical outputs via polarization maintaining fiber and is capable of routing optical signals received over any N of M optical inputs to the N optical outputs.

11. (original) The photonic cross-connect device of claim 10, wherein the at least M optical inputs are couplable to at least M fixed wavelength lasers, and wherein the optical signals are optical carriers at distinct wavelengths.

12. (original) The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a Micro Electro Mechanical System (MEMS).

13. (original) The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a Micro Opto Electro Mechanical System (MOEMS).

14. (original) The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a bubble (champagne) optical switching system.

15. (original) The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a lithium niobate optical switching system.

16. (original) The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a liquid crystal optical switching system.

17. (currently amended) A method for producing optical data streams in an optical communication system, the method comprising:

maintaining a first number M fixed wavelength lasers, each fixed wavelength laser having an output of a different wavelength that the other fixed wavelength lasers;

maintaining a second number N external modulators, wherein the second number N is less than the first number M and greater than one;

routing optical carriers from each of a predetermined N of the M fixed wavelength lasers to a different one of the N external modulators while maintaining the polarity of the optical carriers; and

feeding a data signal to each of the N external modulators to produce N optical data streams at N specific wavelengths.

18. (original) The method of claim 17, wherein routing of the output of each of a predetermined N of the M fixed wavelength lasers to a different one of the N external modulators comprises:

feeding the outputs of the M fixed wavelength lasers into a photonic cross-connect device that is capable of routing the optical carriers of the any N of the M fixed wavelength lasers to the N external modulators; and

configuring the photonic cross-connect device to route the predetermined N of the M fixed wavelength lasers to a different one of the N external modulators.